



SEQUENCE LISTING

<110> Carr, Antony M.

<120> Cell-Cycle Checkpoint Genes

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<211> 8239

<212> DNA

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<220>

<221> CDS

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gaa aac tat ttg gca gca gat gga aaa tct aca aca tgg agt gtc aga	5488
Glu Asn Tyr Leu Ala Ala Asp Gly Lys Ser Thr Thr Trp Ser Val Arg	
1790 1795 1800	
ctg gga cag cta tta tta tca gcc aaa aaa aga gat atc aca gct ttt	5536
Leu Gly Gln Leu Leu Leu Ser Ala Lys Lys Arg Asp Ile Thr Ala Phe	
1805 1810 1815	
tat gac tca ctg aaa cta gtg aga gca gaa caa att gta cct ctt tca	5584
Tyr Asp Ser Leu Lys Leu Val Arg Ala Glu Gln Ile Val Pro Leu Ser	
1820 1825 1830 1835	
gct gca agc ttt gaa aga ggc tcc tac caa cga gga tat gaa tat att	5632
Ala Ala Ser Phe Glu Arg Gly Ser Tyr Gln Arg Gly Tyr Glu Tyr Ile	
1840 1845 1850	
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Val Arg Leu His Met Leu Cys Glu Leu Glu His Ser Ile Lys Pro Leu	
1855 1860 1865	
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Phe Gln His Ser Pro Gly Asp Ser Ser Gln Glu Asp Ser Leu Asn Trp	
1870 1875 1880	
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Val Ala Arg Leu Glu Met Thr Gln Asn Ser Tyr Arg Ala Lys Asp Pro	
1885 1890 1895	

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Ile	Leu	Ala	Leu	Arg	Arg	Ala	Leu	Leu	Ser	Leu	Asn	Lys	Arg	Pro	Asp	
1900					1905					1910					1915	
tac	aat	gaa	atg	gtt	gga	gaa	tgc	tgg	ctg	cag	agt	gcc	agg	gta	gct	5872
Tyr	Asn	Glu	Met	Val	Gly	Glu	Cys	Trp	Leu	Gln	Ser	Ala	Arg	Val	Ala	
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Arg	Lys	Ala	Gly	His	His	Gln	Thr	Ala	Tyr	Asn	Ala	Leu	Leu	Asn	Ala	
			1935					1940						1945		
ggg	gaa	tca	cga	ctc	gct	gaa	ctg	tac	gtg	gaa	agg	gca	aag	tgg	ctc	5968
Gly	Glu	Ser	Arg	Leu	Ala	Glu	Leu	Tyr	Val	Glu	Arg	Ala	Lys	Trp	Leu	
		1950					1955					1960				
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Trp	Ser	Lys	Gly	Asp	Val	His	Gln	Ala	Leu	Ile	Val	Leu	Gln	Lys	Gly	
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Val	Glu	Leu	Cys	Phe	Pro	Glu	Asn	Glu	Thr	Pro	Pro	Glu	Gly	Lys	Asn	
1980					1985					1990					1995	
atg	tta	atc	cat	ggt	cga	gct	atg	cta	cta	gtg	ggc	cga	ttt	atg	gaa	6112
Met	Leu	Ile	His	Gly	Arg	Ala	Met	Leu	Leu	Val	Gly	Arg	Phe	Met	Glu	
				2000					2005					2010		
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Glu	Thr	Ala	Asn	Phe	Glu	Ser	Asn	Ala	Ile	Met	Lys	Lys	Tyr	Lys	Asp	
			2015					2020					2025			
gtg	acc	gcg	tgc	ctg	cca	gaa	tgg	gag	gat	ggg	cat	ttt	tac	ctt	gcc	6208
Val	Thr	Ala	Cys	Leu	Pro	Glu	Trp	Glu	Asp	Gly	His	Phe	Tyr	Leu	Ala	
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Lys	Tyr	Tyr	Asp	Lys	Leu	Met	Pro	Met	Val	Thr	Asp	Asn	Lys	Met	Glu	
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Lys	Gln	Gly	Asp	Leu	Ile	Arg	Tyr	Ile	Val	Leu	His	Phe	Gly	Arg	Ser	
2060				2065						2070					2075	
cta	caa	tat	gga	aat	cag	ttc	ata	tat	cag	tca	atg	cca	cga	atg	tta	6352
Leu	Gln	Tyr	Gly	Asn	Gln	Phe	Ile	Tyr	Gln	Ser	Met	Pro	Arg	Met	Leu	
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Thr	Leu	Trp	Leu	Asp	Tyr	Gly	Thr	Lys	Ala	Tyr	Glu	Trp	Glu	Lys	Ala	
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Gly	Arg	Ser	Asp	Arg	Val	Gln	Met	Arg	Asn	Asp	Leu	Gly	Lys	Ile	Asn	
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Lys	Val	Ile	Thr	Glu	His	Thr	Asn	Tyr	Leu	Ala	Pro	Tyr	Gln	Phe	Leu	
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Thr	Ala	Phe	Ser	Gln	Leu	Ile	Ser	Arg	Ile	Cys	His	Ser	His	Asp	Glu	
2140					2145					2150					2155	

gtt ttt gtt gtc ttg atg gaa ata ata gcc aaa gta ttt cta gcc tat	6592
Val Phe Val Val Leu Met Glu Ile Ile Ala Lys Val Phe Leu Ala Tyr	
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Pro Gln Gln Ala Met Trp Met Met Thr Ala Val Ser Lys Ser Ser Tyr	
2175 2180 2185	
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Pro Met Arg Val Asn Arg Cys Lys Glu Ile Leu Asn Lys Ala Ile His	
2190 2195 2200	
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Met Lys Lys Ser Leu Glu Lys Phe Val Gly Asp Ala Thr Arg Leu Thr	
2205 2210 2215	
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Asp Lys Leu Leu Glu Leu Cys Asn Lys Pro Val Asp Gly Ser Ser Ser	
2220 2225 2230 2235	
aca tta agc atg agc act cat ttt aaa atg ctt aaa aag ctg gta gaa	6832
Thr Leu Ser Met Ser Thr His Phe Lys Met Leu Lys Lys Leu Val Glu	
2240 2245 2250	
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Glu Ala Thr Phe Ser Glu Ile Leu Ile Pro Leu Gln Ser Val Met Ile	
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cct aca ctt cca tca att ctg ggt acc cat gct aac cat gct agc cat	6928
Pro Thr Leu Pro Ser Ile Leu Gly Thr His Ala Asn His Ala Ser His	
2270 2275 2280	
gaa cca ttt cct gga cat tgg gcc tat att gca ggg ttt gat gat atg	6976
Glu Pro Phe Pro Gly His Trp Ala Tyr Ile Ala Gly Phe Asp Asp Met	
2285 2290 2295	
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Val Glu Ile Leu Ala Ser Leu Gln Lys Pro Lys Lys Ile Ser Leu Lys	
2300 2305 2310 2315	
ggc tca gat gga aag ttc tac atc atg atg tgt aag cca aaa gat gac	7072
Gly Ser Asp Gly Lys Phe Tyr Ile Met Met Cys Lys Pro Lys Asp Asp	
2320 2325 2330	
ctg aga aag gat tgt aga cta atg gaa ttc aat tcc ttg att aat aag	7120
Leu Arg Lys Asp Cys Arg Leu Met Glu Phe Asn Ser Leu Ile Asn Lys	
2335 2340 2345	
tgc tta aga aaa gat gca gag tct cgt aga aga gaa ctt cat att cga	7168
Cys Leu Arg Lys Asp Ala Glu Ser Arg Arg Arg Glu Leu His Ile Arg	
2350 2355 2360	
aca tat gca gtt att cca cta aat gat gaa tgt ggg att att gaa tgg	7216
Thr Tyr Ala Val Ile Pro Leu Asn Asp Glu Cys Gly Ile Ile Glu Trp	
2365 2370 2375	
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Val Asn Asn Thr Ala Gly Leu Arg Pro Ile Leu Thr Lys Leu Tyr Lys	
2380 2385 2390 2395	
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Glu Lys Gly Val Tyr Met Thr Gly Lys Glu Leu Arg Gln Cys Met Leu	
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Pro Lys Ser Ala Ala Leu Ser Glu Lys Leu Lys Val Phe Arg Glu Phe
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Leu Leu Pro Arg His Pro Pro Ile Phe His Glu Trp Phe Leu Arg Thr
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Phe Pro Asp Pro Thr Ser Trp Tyr Ser Ser Arg Ser Ala Tyr Cys Arg
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Ser Thr Ala Val Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp
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Arg His Gly Glu Asn Ile Leu Phe Asp Ser Leu Thr Gly Glu Cys Val
2480 2485 2490

cat gta gat ttc aat tgt ctt ttc aat aag gga gaa acc ttt gaa gtt 7600
His Val Asp Phe Asn Cys Leu Phe Asn Lys Gly Glu Thr Phe Glu Val
2495 2500 2505

cca gaa att gtg cca ttt cgc ctg act cat aat atg gtt aat gga atg 7648
Pro Glu Ile Val Pro Phe Arg Leu Thr His Asn Met Val Asn Gly Met
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Gly Pro Met Gly Thr Glu Gly Leu Phe Arg Arg Ala Cys Glu Val Thr
2525 2530 2535

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Met Arg Leu Met Arg Asp Gln Arg Glu Pro Leu Met Ser Val Leu Lys
2540 2545 2550 2555

act ttt cta cat gat cct ctt gtg gaa tgg agt aaa cca gtg aaa ggg 7792
Thr Phe Leu His Asp Pro Leu Val Glu Trp Ser Lys Pro Val Lys Gly
2560 2565 2570

cat tcc aaa gcg cca ctg aat gaa act gga gaa gtt gtc aat gaa aag 7840
His Ser Lys Ala Pro Leu Asn Glu Thr Gly Glu Val Val Asn Glu Lys
2575 2580 2585

gcc aag acc cat gtt ctt gac att gag cag cga cta caa ggt gta atc 7888
Ala Lys Thr His Val Leu Asp Ile Glu Gln Arg Leu Gln Gly Val Ile
2590 2595 2600

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Lys Thr Arg Asn Arg Val Thr Gly Leu Pro Leu Ser Ile Glu Gly His
2605 2610 2615

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Val His Tyr Leu Ile Gln Glu Ala Thr Asp Glu Asn Leu Leu Cys Gln
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Met Tyr Leu Gly Trp Thr Pro Tyr Met
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Glu Leu Gly Ser Ala Thr Pro Glu Glu Tyr Asn Thr Val Val Gln Lys
 20 25 30

Pro Arg Gln Ile Leu Cys Gln Phe Ile Asp Arg Ile Leu Thr Asp Val
 35 40 45

Asn Val Val Ala Val Glu Leu Val Lys Lys Thr Asp Ser Gln Pro Thr
 50 55 60

Ser Val Met Leu Leu Asp Phe Ile Gln His Ile Met Lys Ser Ser Pro
 65 70 75 80

Leu Met Phe Val Asn Val Ser Gly Ser His Glu Arg Lys Gly Ser Cys
 85 90 95

Ile Glu Phe Ser Asn Trp Ile Ile Thr Arg Leu Leu Arg Ile Ala Ala
 100 105 110

Thr Pro Ser Cys His Leu Leu His Lys Lys Ile Cys Glu Val Ile Cys
 115 120 125

Ser Leu Leu Phe Leu Phe Lys Ser Lys Ser Pro Ala Ile Phe Gly Val
 130 135 140

Leu Thr Lys Glu Leu Leu Gln Leu Phe Glu Asp Leu Val Tyr Leu His
 145 150 155 160

Arg Arg Asn Val Met Gly His Ala Val Glu Trp Pro Val Val Met Ser
 165 170 175

Arg Phe Leu Ser Gln Leu Asp Glu His Met Gly Tyr Leu Gln Ser Ala
 180 185 190

Pro Leu Gln Leu Met Ser Met Gln Asn Leu Glu Phe Ile Glu Val Thr
 195 200 205

Leu Leu Met Val Leu Thr Arg Ile Ile Ala Ile Val Phe Phe Arg Arg
 210 215 220

Gln Glu Leu Leu Leu Trp Gln Ile Gly Cys Val Leu Leu Glu Tyr Gly
 225 230 235 240

Ser Pro Lys Ile Lys Ser Leu Ala Ile Ser Phe Leu Thr Glu Leu Phe
 245 250 255

Gln Leu Gly Gly Leu Pro Ala Gln Pro Ala Ser Thr Phe Phe Ser Ser
 260 265 270

Phe Leu Glu Leu Leu Lys His Leu Val Glu Met Asp Thr Asp Gln Leu
 275 280 285

Lys Leu Tyr Glu Glu Pro Leu Ser Lys Leu Ile Lys Thr Leu Phe Pro
 290 295 300

Phe Glu Ala Glu Ala Tyr Arg Asn Ile Glu Pro Val Tyr Leu Asn Met
 305 310 315 320

Leu Leu Glu Lys Leu Cys Val Met Phe Glu Asp Gly Val Leu Met Arg
 325 330 335

Leu Lys Ser Asp Leu Leu Lys Ala Ala Leu Cys His Leu Leu Gln Tyr
 340 345 350

Phe Leu Lys Phe Val Pro Ala Gly Tyr Glu Ser Ala Leu Gln Val Arg
 355 360 365

Lys Val Tyr Val Arg Asn Ile Cys Lys Ala Leu Leu Asp Val Leu Gly
 370 375 380

Ile Glu Val Asp Ala Glu Tyr Leu Leu Gly Pro Leu Tyr Ala Ala Leu
 385 390 395 400

Lys Met Glu Ser Met Glu Ile Ile Glu Glu Ile Gln Cys Gln Thr Gln
 405 410 415

Gln Glu Asn Leu Ser Ser Asn Ser Asp Gly Ile Ser Pro Lys Arg Arg
 420 425 430

Arg Leu Ser Ser Ser Leu Asn Pro Ser Lys Arg Ala Pro Lys Gln Thr
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Glu Glu Ile Lys His Val Asp Met Asn Gln Lys Ser Ile Leu Trp Ser
 450 455 460

Ala Leu Lys Gln Lys Ala Glu Ser Leu Gln Ile Ser Leu Glu Tyr Ser
465 470 475 480

Gly Leu Lys Asn Pro Val Ile Glu Met Leu Glu Gly Ile Ala Val Val
485 490 495

Leu Gln Leu Thr Ala Leu Cys Thr Val His Cys Ser His Gln Asn Met
500 505 510

Asn Cys Arg Thr Phe Lys Asp Cys Gln His Lys Ser Lys Lys Lys Pro
515 520 525

Ser Val Val Ile Thr Trp Met Ser Leu Asp Phe Tyr Thr Lys Val Leu
530 535 540

Lys Ser Cys Arg Ser Leu Leu Glu Ser Val Gln Lys Leu Asp Leu Glu
545 550 555 560

Ala Thr Ile Asp Lys Val Val Lys Ile Tyr Asp Ala Leu Ile Tyr Met
565 570 575

Gln Val Asn Ser Ser Phe Glu Asp His Ile Leu Glu Asp Leu Cys Gly
580 585 590

Met Leu Ser Leu Pro Trp Ile Tyr Ser His Ser Asp Asp Gly Cys Leu
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Lys Leu Thr Thr Phe Ala Ala Asn Leu Leu Thr Leu Ser Cys Arg Ile
610 615 620

Ser Asp Ser Tyr Ser Pro Gln Ala Gln Ser Arg Cys Val Phe Leu Leu
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Thr Leu Phe Pro Arg Arg Ile Phe Leu Glu Trp Arg Thr Ala Val Tyr
645 650 655

Asn Trp Ala Leu Gln Ser Ser His Glu Val Ile Arg Ala Ser Cys Val
660 665 670

Ser Gly Phe Phe Ile Leu Leu Gln Gln Gln Asn Ser Cys Asn Arg Val
675 680 685

Pro Lys Ile Leu Ile Asp Lys Val Lys Asp Asp Ser Asp Ile Val Lys
690 695 700

Lys Glu Phe Ala Ser Ile Leu Gly Gln Leu Val Cys Thr Leu His Gly
705 710 715 720

Met Phe Tyr Leu Thr Ser Ser Leu Thr Glu Pro Phe Ser Glu His Gly
725 730 735

His Val Asp Leu Phe Cys Arg Asn Leu Lys Ala Thr Ser Gln His Glu
740 745 750

Cys Ser Ser Ser Gln Leu Lys Ala Ser Val Cys Lys Pro Phe Leu Phe
755 760 765

Leu Leu Lys Lys Lys Ile Pro Ser Pro Val Lys Leu Ala Phe Ile Asp
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Asn Leu His His Leu Cys Lys His Leu Asp Phe Arg Glu Asp Glu Thr
785 790 795 800

Asp Val Lys Ala Val Leu Gly Thr Leu Leu Asn Leu Met Glu Asp Pro
805 810 815

Asp Lys Asp Val Arg Val Ala Phe Ser Gly Asn Ile Lys His Ile Leu
820 825 830

Glu Ser Leu Asp Ser Glu Asp Gly Phe Ile Lys Glu Leu Phe Val Leu
835 840 845

Arg Met Lys Glu Ala Tyr Thr His Ala Gln Ile Ser Arg Asn Asn Glu
850 855 860

Leu Lys Asp Thr Leu Ile Leu Thr Thr Gly Asp Ile Gly Arg Ala Ala
865 870 875 880

Lys Gly Asp Leu Val Pro Phe Ala Leu Leu His Leu Leu His Cys Leu
885 890 895

Leu Ser Lys Ser Ala Ser Val Ser Gly Ala Ala Tyr Thr Glu Ile Arg
900 905 910

Ala Leu Val Ala Ala Lys Ser Val Lys Leu Gln Ser Phe Phe Ser Gln
915 920 925

Tyr Lys Lys Pro Ile Cys Gln Phe Leu Val Glu Ser Leu His Ser Ser
930 935 940

Gln Met Thr Ala Leu Pro Asn Thr Pro Cys Gln Asn Ala Asp Val Arg
945 950 955 960

Lys Gln Asp Val Ala His Gln Arg Glu Met Ala Leu Asn Thr Leu Ser
965 970 975

Glu Ile Ala Asn Val Phe Asp Phe Pro Asp Leu Asn Arg Phe Leu Thr
 980 985 990

Arg Thr Leu Gln Val Leu Leu Pro Asp Leu Ala Ala Lys Ala Ser Pro
 995 1000 1005

Ala Ala Ser Ala Leu Ile Arg Thr Leu Gly Lys Gln Leu Asn Val
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Asn Arg Arg Glu Ile Leu Ile Asn Asn Phe Lys Tyr Ile Phe Ser
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His Leu Val Cys Ser Cys Ser Lys Asp Glu Leu Glu Arg Ala Leu
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His Tyr Leu Lys Asn Glu Thr Glu Ile Glu Leu Gly Ser Leu Leu
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Arg Gln Asp Phe Gln Gly Leu His Asn Glu Leu Leu Leu Arg Ile
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Gly Glu His Tyr Gln Gln Val Phe Asn Gly Leu Ser Ile Leu Ala
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Ser Phe Ala Ser Ser Asp Asp Pro Tyr Gln Gly Pro Arg Asp Ile
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Ile Ser Pro Glu Leu Met Ala Asp Tyr Leu Gln Pro Lys Leu Leu
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Gly Ile Glu Asp Lys Lys Met Ala Leu Asn Ser Leu Met Ser Leu
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Met Lys Leu Met Gly Pro Lys His Val Ser Ser Val Arg Val Lys
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Pro Glu Leu Cys Cys Arg Ala Trp Asp Cys Phe Val Arg Cys Leu
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Asp His Ala Cys Leu Gly Ser Leu Leu Ser His Val Ile Val Ala
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 Phe His Tyr Leu Ile Ile Glu Asn Arg Asp Ala Val Gln Asp Phe
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 His Glu Asn Val Asp Val Arg Ile His Ala Leu Thr Ser Leu Lys
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 Asp Ser Glu Thr Val Glu Pro Ile Ile Ser Gln Leu Val Thr Val
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 Gln Asp Ser Ala Ala Tyr Ala Ile Gln Glu Leu Leu Ser Ile Tyr
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 Asp Cys Arg Glu Met Glu Thr Asn Gly Pro Gly His Gln Leu Trp
 1430 1435 1440
 Arg Arg Phe Pro Glu His Val Arg Glu Ile Leu Glu Pro His Leu
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Asn Thr	Arg Tyr Lys Ser	Ser	Gln Lys Ser Thr	Asp	Trp Ser Gly
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Val Lys	Lys Pro Ile Tyr	Leu	Ser Lys Leu Gly	Ser	Asn Phe Ala
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Glu Trp	Ser Ala Ser Trp	Ala	Gly Tyr Leu Ile	Thr	Lys Val Arg
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His Asp	Leu Ala Ser Lys	Ile	Phe Thr Cys Cys	Ser	Ile Met Met
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Lys His	Asp Phe Lys Val	Thr	Ile Tyr Leu Leu	Pro	His Ile Leu
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Tyr Ala	Glu Ile Met Ala	Val	Leu Lys His Asp	Asp	Gln His Thr
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Glu Asp	Tyr Gln Ser Val	Thr	Arg Phe Leu Asp	Leu	Ile Pro Gln
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Asp Thr	Leu Ala Val Ala	Ser	Phe Arg Ser Lys	Ala	Tyr Thr Arg
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His Glu	Pro Asp Gly Val	Ala	Gly Val Ser Ala	Ile	Arg Lys Ala
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Leu	Leu	Arg	Asp	Ala	Thr	Ala	Cys	Tyr	Asp	Arg	Ala	Ile	Gln	Leu
1715						1720					1725			
Glu	Pro	Asp	Gln	Ile	Ile	His	Tyr	His	Gly	Val	Val	Lys	Ser	Met
1730						1735					1740			
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1745						1750					1755			
Val	His	Ala	Asn	Arg	Ser	Glu	Trp	Thr	Asp	Glu	Leu	Asn	Thr	Tyr
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Leu	Gly	Gln	Leu	Leu	Leu	Ser	Ala	Lys	Lys	Arg	Asp	Ile	Thr	Ala
1805						1810					1815			
Phe	Tyr	Asp	Ser	Leu	Lys	Leu	Val	Arg	Ala	Glu	Gln	Ile	Val	Pro
1820						1825					1830			
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Glu	Tyr	Ile	Val	Arg	Leu	His	Met	Leu	Cys	Glu	Leu	Glu	His	Ser
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Asp	Ser	Leu	Asn	Trp	Val	Ala	Arg	Leu	Glu	Met	Thr	Gln	Asn	Ser
1880						1885					1890			
Tyr	Arg	Ala	Lys	Asp	Pro	Ile	Leu	Ala	Leu	Arg	Arg	Ala	Leu	Leu
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Ser	Leu	Asn	Lys	Arg	Pro	Asp	Tyr	Asn	Glu	Met	Val	Gly	Glu	Cys
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Trp	Leu	Gln	Ser	Ala	Arg	Val	Ala	Arg	Lys	Ala	Gly	His	His	Gln
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1985 1990 1995

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2015 2020 2025

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Ala Pro Tyr Gln Phe Leu Thr Ala Phe Ser Gln Leu Ile Ser Arg
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Ile Ala Lys Val Phe Leu Ala Tyr Pro Gln Gln Ala Met Trp Met
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Cys	Lys	Glu	Ile	Leu	Asn	Lys	Ala	Ile	His	Met	Lys	Lys	Ser	Leu
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2210						2215					2220			
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2225						2230					2235			
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Ser Trp	Tyr Ser	Ser Arg	Ser	Ala Tyr	Cys Arg	Ser	Thr Ala	Val	
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2465			2470			2475			
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Asp Phe	Asn Cys	Leu Phe	Asn	Lys Gly	Glu Thr	Phe	Glu Val	Pro	
2495			2500			2505			
Glu Ile	Val Pro	Phe Arg	Leu	Thr His	Asn Met	Val	Asn Gly	Met	
2510			2515			2520			
Gly Pro	Met Gly	Thr Glu	Gly	Leu Phe	Arg Arg	Ala	Cys Glu	Val	
2525			2530			2535			
Thr Met	Arg Leu	Met Arg	Asp	Gln Arg	Glu Pro	Leu	Met Ser	Val	
2540			2545			2550			
Leu Lys	Thr Phe	Leu His	Asp	Pro Leu	Val Glu	Trp	Ser Lys	Pro	
2555			2560			2565			
Val Lys	Gly His	Ser Lys	Ala	Pro Leu	Asn Glu	Thr	Gly Glu	Val	
2570			2575			2580			
Val Asn	Glu Lys	Ala Lys	Thr	His Val	Leu Asp	Ile	Glu Gln	Arg	
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Leu Ser	Ile Glu	Gly His	Val	His Tyr	Leu Ile	Gln	Glu Ala	Thr	
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 Asp Asp Ser Lys Ser Glu Phe Ile Ser Pro Lys Met Leu Lys Glu Ala
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Pro Arg Thr Ile Ser Leu Phe Ala Asp Ile Arg Phe Ile Lys Leu Phe	120	125	130	
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Asp Ser Leu Lys Glu Phe His Lys Leu Ile Tyr Gln Leu Ile Ser Glu	135	140	145	
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Lys Ser Phe Leu Trp Asp Leu Tyr Ala Ser Phe Met Arg Tyr Trp Lys	150	155	160	
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Tyr Tyr Ile Thr Asn Val Ser Ser Ile Val Leu Gln Ile Thr Asn Ala	165	170	175	180
aca ttc cct tac aag atg ccc tca ccc aat tct caa cca ttg cag agt				1172
Thr Phe Pro Tyr Lys Met Pro Ser Pro Asn Ser Gln Pro Leu Gln Ser	185	190	195	
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Ile Ser Pro Asn Tyr Pro Thr His Arg Glu Asp Lys Phe Asp Leu Leu	200	205	210	
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Ile Ile Asn Ile Glu Glu Ala Cys Thr Phe Phe Phe Glu Ser Ala His	215	220	225	
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Phe Phe Ala Gln Cys Ser Tyr Leu Lys Lys Ser Asn Phe Pro Ser Pro	230	235	240	
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Pro Leu Phe Thr Ala Trp Thr Trp Ile Lys Pro Cys Phe Phe Asn Phe	245	250	255	260
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Val Ile Leu Leu Lys Arg Ile Ser Ile Gly Asp Ser Gln Leu Phe Leu	265	270	275	
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His Leu His Ser Arg Ile Val Gln Thr Leu Cys Cys Phe Ser Leu Asn	280	285	290	
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Phe Ile Tyr His Gly Leu Pro Ile Cys Glu Lys Ser Lys His Ile Leu	295	300	305	
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Met Ser Ser Ile Asn Leu Thr Leu Gly Ser Leu Lys Lys Thr Tyr Thr	310	315	320	
gtt gct aat act gct ata tct ctt ttt ttt ctc tct tta ttt gtt tta				1604
Val Ala Asn Thr Ala Ile Ser Leu Phe Phe Leu Ser Leu Phe Val Leu	325	330	335	340
ccc aaa act gta gct ggt cta ttc tat cct ttt ggg gtt tcc tta ctt				1652
Pro Lys Thr Val Ala Gly Leu Phe Tyr Pro Phe Gly Val Ser Leu Leu	345	350	355	
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375 380 385	
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Gln Thr Thr Leu Arg Ala Phe Gly Glu Ile Cys Thr Gly Lys Leu Glu	
390 395 400	
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Asn Thr Leu Phe Ser Asn Ser Glu Leu Asn Leu Phe Leu Leu His Tyr	
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Asn Gly His Asn Ile Cys Thr Phe Ala Lys Trp Cys Ile Asn Asn Asn	
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Tyr Ser Ser His Asn Val Thr Ile Ser Glu Asp Asp Leu Lys Asn Phe	
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Ser Leu Val Leu Cys Thr His Val Ala Lys Val Asn Glu Lys Thr Asn	
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Ser Ile Phe Arg Thr Tyr Glu Val His Gly Cys Glu Val Cys Asn Ser	
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Phe Cys Leu Leu Phe Asp Glu Arg Ser Pro Phe Lys Ile Pro Tyr His	
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Glu Leu Phe Cys Ala Leu Leu Lys Asn Pro Asp Ile Ile Ser Ser Ser	
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Val Lys Gln Ser Leu Leu Leu Asp Gly Phe Phe Arg Trp Ser Gln His	
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Cys Ser Asn Phe Asn Lys Glu Ser Met Leu Ser Leu Arg Glu Phe Ile	
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Met Lys Ala Leu Ala Ser Thr Ser Arg Cys Leu Arg Val Val Ala Ala	
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Lys Val Leu Pro Ile Phe Ile Lys Gly Pro Asn Asn Leu Asp Ile Val	
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Leu Asn Val Ile	Leu Thr Glu Ser Glu	Leu Glu Val Asn Lys Val	
1285	1290	1295	
att gaa gaa ttc	cag ctt gtt att aat	caa ccg gga cct gat gga	4517
Ile Glu Glu Phe	Gln Leu Val Ile Asn	Gln Pro Gly Pro Asp Gly	
1300	1305	1310	
tta aat tcc gtg	ggg caa caa aga tac	acc tca ttt gta gat gta	4562
Leu Asn Ser Val	Gly Gln Gln Arg Tyr	Thr Ser Phe Val Asp Val	
1315	1320	1325	
ttt ttt aag att	gtg gat tac ctt aac	aaa tgg ctt cgc atg cga	4607
Phe Phe Lys Ile	Val Asp Tyr Leu Asn	Lys Trp Leu Arg Met Arg	
1330	1335	1340	
aag aag agg aat	tgg gat aga cgt tct	gcc att gca agg aaa gag	4652
Lys Lys Arg Asn	Trp Asp Arg Arg Ser	Ala Ile Ala Arg Lys Glu	
1345	1350	1355	

aac cgt tat atg tcg gtg gaa gat gct acc tct cga gaa tca tcg	4697
Asn Arg Tyr Met Ser Val Glu Asp Ala Thr Ser Arg Glu Ser Ser	
1360 1365 1370	
atc tca aaa gtt gag tca ttt ctt tct cga ttt cct tca aaa aca	4742
Ile Ser Lys Val Glu Ser Phe Leu Ser Arg Phe Pro Ser Lys Thr	
1375 1380 1385	
tta ggt att gtc tct tta aat tgt gga ttt cat gct cgt gca ttg	4787
Leu Gly Ile Val Ser Leu Asn Cys Gly Phe His Ala Arg Ala Leu	
1390 1395 1400	
ttt tat tgg gag caa cac ata cgt aat gct aca gct cca tat gca	4832
Phe Tyr Trp Glu Gln His Ile Arg Asn Ala Thr Ala Pro Tyr Ala	
1405 1410 1415	
gct tta gag tcc gat tat aga gtt ttg cag gaa ata tat gct gga	4877
Ala Leu Glu Ser Asp Tyr Arg Val Leu Gln Glu Ile Tyr Ala Gly	
1420 1425 1430	
att gat gat cca gat gaa atc gaa gca gtg tct tta aat ttc cat	4922
Ile Asp Asp Pro Asp Glu Ile Glu Ala Val Ser Leu Asn Phe His	
1435 1440 1445	
gat tac tcg ttt gat caa caa ctc ctt tta cat gaa aat tca gga	4967
Asp Tyr Ser Phe Asp Gln Gln Leu Leu Leu His Glu Asn Ser Gly	
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aca tgg gac tcg gct ttg agt tgt tac gaa att att att caa aag	5012
Thr Trp Asp Ser Ala Leu Ser Cys Tyr Glu Ile Ile Ile Gln Lys	
1465 1470 1475	
gat cct gaa aat aaa aag gcg aaa atc ggt ttg ctt aac agc atg	5057
Asp Pro Glu Asn Lys Lys Ala Lys Ile Gly Leu Leu Asn Ser Met	
1480 1485 1490	
ctg caa tcg ggg cat tat gaa tct ctt gtt ttg agt tta gat tct	5102
Leu Gln Ser Gly His Tyr Glu Ser Leu Val Leu Ser Leu Asp Ser	
1495 1500 1505	
ttt ata atc aat gac aac cac gag tat tcg aag atg tta aat ttg	5147
Phe Ile Ile Asn Asp Asn His Glu Tyr Ser Lys Met Leu Asn Leu	
1510 1515 1520	
ggt att gaa gct tca tgg cgt tcg cta tct att gat tcg tta aaa	5192
Gly Ile Glu Ala Ser Trp Arg Ser Leu Ser Ile Asp Ser Leu Lys	
1525 1530 1535	
aag tgt ctt tca aaa agc aac ttg gaa tct ttc gaa gct aaa ttg	5237
Lys Cys Leu Ser Lys Ser Asn Leu Glu Ser Phe Glu Ala Lys Leu	
1540 1545 1550	
ggt agc ata ttt tac caa tac cta cgg aag gat tct ttt gct gaa	5282
Gly Ser Ile Phe Tyr Gln Tyr Leu Arg Lys Asp Ser Phe Ala Glu	
1555 1560 1565	
ttg acg gag cgg ctg caa ccc ttg tac gtt gat gct gct aca gca	5327
Leu Thr Glu Arg Leu Gln Pro Leu Tyr Val Asp Ala Ala Thr Ala	
1570 1575 1580	
att gca aac aca ggc gcc cat tca gcc tat gat tgt tat gat att	5372
Ile Ala Asn Thr Gly Ala His Ser Ala Tyr Asp Cys Tyr Asp Ile	
1585 1590 1595	

tta tct aag ctg	cac gca att aat gac	ttt agt agg att gct gaa	5417
Leu Ser Lys Leu	His Ala Ile Asn Asp	Phe Ser Arg Ile Ala Glu	
1600	1605	1610	
act gac gga att	gtt tcc gac aat ctt	gat att gtt ctt cgc cgt	5462
Thr Asp Gly Ile	Val Ser Asp Asn Leu	Asp Ile Val Leu Arg Arg	
1615	1620	1625	
cgg ctt agc caa	gta gct ccg tac ggt	aaa ttc aag cac caa atc	5507
Arg Leu Ser Gln	Val Ala Pro Tyr Gly	Lys Phe Lys His Gln Ile	
1630	1635	1640	
ctg tcc act cac	tta gtt ggc tat gaa	aaa ttt gaa aac acg aag	5552
Leu Ser Thr His	Leu Val Gly Tyr Glu	Lys Phe Glu Asn Thr Lys	
1645	1650	1655	
aaa act gct gaa	ata tat ctc gag att	gca aga ata tct cga aaa	5597
Lys Thr Ala Glu	Ile Tyr Leu Glu Ile	Ala Arg Ile Ser Arg Lys	
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aat ggt caa ttt	caa aga gcc ttc aat	gcc atc ctc aaa gca atg	5642
Asn Gly Gln Phe	Gln Arg Ala Phe Asn	Ala Ile Leu Lys Ala Met	
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gat tta gat aaa	ccg cta gca aca ata	gag cac gca caa tgg tgg	5687
Asp Leu Asp Lys	Pro Leu Ala Thr Ile	Glu His Ala Gln Trp Trp	
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tgg cat caa ggg	caa cat cgt aaa gct	att tct gaa ttg aat ttt	5732
Trp His Gln Gly	Gln His Arg Lys Ala	Ile Ser Glu Leu Asn Phe	
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tcg ctt aat aac	aac atg ttt gat ttg	gtt gat gag cat gaa gaa	5777
Ser Leu Asn Asn	Asn Met Phe Asp Leu	Val Asp Glu His Glu Glu	
1720	1725	1730	
aga cct aaa aat	cgt aaa gaa act tta	gga aat cca ctt aaa gga	5822
Arg Pro Lys Asn	Arg Lys Glu Thr Leu	Gly Asn Pro Leu Lys Gly	
1735	1740	1745	
aaa gtg ttc ttg	aaa ctt aca aaa tgg	ctc gga aaa gct ggc caa	5867
Lys Val Phe Leu	Lys Leu Thr Lys Trp	Leu Gly Lys Ala Gly Gln	
1750	1755	1760	
ctg gga ttg aag	gat ttg gag acg tat	tat cat aaa gcg gta gag	5912
Leu Gly Leu Lys	Asp Leu Glu Thr Tyr	Tyr His Lys Ala Val Glu	
1765	1770	1775	
att tac tca gaa	tgt gag aat acg cat	tat tat ctt ggc cat cat	5957
Ile Tyr Ser Glu	Cys Glu Asn Thr His	Tyr Tyr Leu Gly His His	
1780	1785	1790	
cga gtt tta atg	tat gaa gaa gaa caa	aag ctc cca gtt aat gaa	6002
Arg Val Leu Met	Tyr Glu Glu Glu Gln	Lys Leu Pro Val Asn Glu	
1795	1800	1805	
cag agc gaa cga	ttt tta agt ggt gag	tta gta act cgc ata att	6047
Gln Ser Glu Arg	Phe Leu Ser Gly Glu	Leu Val Thr Arg Ile Ile	
1810	1815	1820	
aac gaa ttt ggt	cga tct ttg tac tat	ggt aca aat cat ata tat	6092
Asn Glu Phe Gly	Arg Ser Leu Tyr Tyr	Gly Thr Asn His Ile Tyr	
1825	1830	1835	

gaa agt atg cca aaa ttg ctc aca ctg tgg ctt gat ttt ggg gcc	6137
Glu Ser Met Pro Lys Leu Leu Thr Leu Trp Leu Asp Phe Gly Ala	
1840 1845 1850	
gaa gaa ctt cgc tta tct aaa gat gac ggc gaa aag tac ttt cgt	6182
Glu Glu Leu Arg Leu Ser Lys Asp Asp Gly Glu Lys Tyr Phe Arg	
1855 1860 1865	
gaa cac att atc tct tcg aga aaa aaa tct ttg gaa ctt atg aat	6227
Glu His Ile Ile Ser Ser Arg Lys Lys Ser Leu Glu Leu Met Asn	
1870 1875 1880	
tcg aat gtt tgt cgc ctt tct atg aaa att cct caa tac ttt ttt	6272
Ser Asn Val Cys Arg Leu Ser Met Lys Ile Pro Gln Tyr Phe Phe	
1885 1890 1895	
ctg gtt gca tta tcc caa atg ata tcc aga gta tgc cat cca aat	6317
Leu Val Ala Leu Ser Gln Met Ile Ser Arg Val Cys His Pro Asn	
1900 1905 1910	
aat aaa gtt tat aaa att ttg gaa cat ata att gca aac gtt gta	6362
Asn Lys Val Tyr Lys Ile Leu Glu His Ile Ile Ala Asn Val Val	
1915 1920 1925	
gca tct tat cct ggg gag acg cta tgg caa tta atg gca aca ata	6407
Ala Ser Tyr Pro Gly Glu Thr Leu Trp Gln Leu Met Ala Thr Ile	
1930 1935 1940	
aaa tcg act tct caa aag cgc tcg ctt cgt gga aaa agc att tta	6452
Lys Ser Thr Ser Gln Lys Arg Ser Leu Arg Gly Lys Ser Ile Leu	
1945 1950 1955	
aat gtt tta cat tct agg aag ctt tct atg tct tcc aaa gtt gat	6497
Asn Val Leu His Ser Arg Lys Leu Ser Met Ser Ser Lys Val Asp	
1960 1965 1970	
ata aaa gca ctc agt caa tct gca att ctc att act gaa aag tta	6542
Ile Lys Ala Leu Ser Gln Ser Ala Ile Leu Ile Thr Glu Lys Leu	
1975 1980 1985	
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Ile Asn Leu Cys Asn Thr Arg Ile Asn Ser Lys Ser Val Lys Met	
1990 1995 2000	
agc tta aag gat cat ttt cgg ctt tct ttt gat gat ccg gta gat	6632
Ser Leu Lys Asp His Phe Arg Leu Ser Phe Asp Asp Pro Val Asp	
2005 2010 2015	
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Leu Val Ile Pro Ala Lys Ser Phe Leu Asp Ile Thr Leu Pro Ala	
2020 2025 2030	
aaa gat gct aac aga gct agt cat tat cca ttt cca aaa act cag	6722
Lys Asp Ala Asn Arg Ala Ser His Tyr Pro Phe Pro Lys Thr Gln	
2035 2040 2045	
cct act ctg ttg aaa ttt gag gat gag gtg gat ata atg aac tct	6767
Pro Thr Leu Leu Lys Phe Glu Asp Glu Val Asp Ile Met Asn Ser	
2050 2055 2060	
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Leu Gln Lys Pro Arg Lys Val Tyr Val Arg Gly Thr Asp Gly Asn	
2065 2070 2075	

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Leu Tyr Pro Phe	Leu Cys Lys Pro	Lys Asp Asp Leu Arg	Lys Asp	
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gct aga ttg atg	gaa ttt aat aat	ctt att tgt aaa ata	ttg agg	6902
Ala Arg Leu Met	Glu Phe Asn Asn	Leu Ile Cys Lys Ile	Leu Arg	
2095	2100	2105		
aaa gat caa gaa	gcg aac aga agg	aac ttg tgt att aga	act tat	6947
Lys Asp Gln Glu	Ala Asn Arg Arg	Asn Leu Cys Ile Arg	Thr Tyr	
2110	2115	2120		
gtt gtt att cct	tta aat gaa gaa	tgc gga ttt atc gaa	tgg gta	6992
Val Val Ile Pro	Leu Asn Glu Glu	Cys Gly Phe Ile Glu	Trp Val	
2125	2130	2135		
aat cat act cgt	cca ttt aga gaa	att ttg tta aaa agc	tat aga	7037
Asn His Thr Arg	Pro Phe Arg Glu	Ile Leu Leu Lys Ser	Tyr Arg	
2140	2145	2150		
cag aaa aac att	ccc ata tca tat	caa gaa atc aaa gtt	gat tta	7082
Gln Lys Asn Ile	Pro Ile Ser Tyr	Gln Glu Ile Lys Val	Asp Leu	
2155	2160	2165		
gac ttt gca ctg	cga agt cct aac	cct ggt gat ata ttt	gaa aag	7127
Asp Phe Ala Leu	Arg Ser Pro Asn	Pro Gly Asp Ile Phe	Glu Lys	
2170	2175	2180		
aaa atc tta ccg	aaa ttt cct cca	gtt ttt tat gag tgg	ttt gtt	7172
Lys Ile Leu Pro	Lys Phe Pro Pro	Val Phe Tyr Glu Trp	Phe Val	
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gaa tct ttc cca	gaa cca aat aat	tgg gtt act agt aga	caa aac	7217
Glu Ser Phe Pro	Glu Pro Asn Asn	Trp Val Thr Ser Arg	Gln Asn	
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Tyr Cys Arg Thr	Leu Ala Val Met	Ser Ile Val Gly Tyr	Val Leu	
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Gly Leu Gly Asp	Arg His Gly Glu	Asn Ile Leu Phe Asp	Glu Phe	
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Thr Gly Glu Ala	Ile His Val Asp	Phe Asn Cys Leu Phe	Asp Lys	
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Gly Leu Thr Phe	Glu Lys Pro Glu	Lys Val Pro Phe Arg	Leu Thr	
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cat aat atg gta	gat gca atg ggt	ccg aca ggt tat gaa	ggg ggt	7442
His Asn Met Val	Asp Ala Met Gly	Pro Thr Gly Tyr Glu	Gly Gly	
2275	2280	2285		
ttc agg aaa gct	agc gaa ata acg	atg cgg ctt ctt cgc	tca aac	7487
Phe Arg Lys Ala	Ser Glu Ile Thr	Met Arg Leu Leu Arg	Ser Asn	
2290	2295	2300		
caa gat aca ttg	atg agc gta cta	gag tct ttc cta cat	gat cct	7532
Gln Asp Thr Leu	Met Ser Val Leu	Glu Ser Phe Leu His	Asp Pro	
2305	2310	2315		

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Leu Val Glu Trp Asn Arg Lys Lys Ser Ser Ser Lys Tyr Pro Asn	
2320 2325 2330	
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Asn Glu Ala Asn Glu Val Leu Asp Ile Ile Arg Lys Lys Phe Gln	
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<212> PRT

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35 40 45

Ser Met Thr Ser Glu Leu Val Glu Val Leu Ile Glu Val Gly Leu Leu
50 55 60

Ala Phe Lys His Asp Asp Ser Lys Ser Glu Phe Ile Ser Pro Lys Met
65 70 75 80

Leu Lys Glu Ala His Leu Ser Leu Gln Ala Leu Met Leu Ile Leu Lys
 85 90 95

Arg Ser Pro Thr Val Leu Arg Glu Ile Lys Ser Ser Val Thr Leu Leu
 100 105 110

Asp Trp Ile Leu Pro Arg Thr Ile Ser Leu Phe Ala Asp Ile Arg Phe
 115 120 125

Ile Lys Leu Phe Asp Ser Leu Lys Glu Phe His Lys Leu Ile Tyr Gln
 130 135 140

Leu Ile Ser Glu Lys Ser Phe Leu Trp Asp Leu Tyr Ala Ser Phe Met
 145 150 155 160

Arg Tyr Trp Lys Tyr Tyr Ile Thr Asn Val Ser Ser Ile Val Leu Gln
 165 170 175

Ile Thr Asn Ala Thr Phe Pro Tyr Lys Met Pro Ser Pro Asn Ser Gln
 180 185 190

Pro Leu Gln Ser Ile Ser Pro Asn Tyr Pro Thr His Arg Glu Asp Lys
 195 200 205

Phe Asp Leu Leu Ile Ile Asn Ile Glu Glu Ala Cys Thr Phe Phe Phe
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Glu Ser Ala His Phe Phe Ala Gln Cys Ser Tyr Leu Lys Lys Ser Asn
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Phe Pro Ser Pro Pro Leu Phe Thr Ala Trp Thr Trp Ile Lys Pro Cys
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Phe Phe Asn Phe Val Ile Leu Leu Lys Arg Ile Ser Ile Gly Asp Ser
 260 265 270

Gln Leu Phe Leu His Leu His Ser Arg Ile Val Gln Thr Leu Cys Cys
 275 280 285

Phe Ser Leu Asn Phe Ile Tyr His Gly Leu Pro Ile Cys Glu Lys Ser
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Lys His Ile Leu Met Ser Ser Ile Asn Leu Thr Leu Gly Ser Leu Lys
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Lys Thr Tyr Thr Val Ala Asn Thr Ala Ile Ser Leu Phe Phe Leu Ser
 325 330 335

Leu Phe Val Leu Pro Lys Thr Val Ala Gly Leu Phe Tyr Pro Phe Gly
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Val Ser Leu Leu Ser Asp Phe Lys Val Leu Glu Gln Leu Glu Pro Asp
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Ser Glu Ile Asp Gln Thr Thr Leu Arg Ala Phe Gly Glu Ile Cys Thr
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Gly Lys Leu Glu Asn Thr Leu Phe Ser Asn Ser Glu Leu Asn Leu Phe
 405 410 415

Leu Leu His Tyr Leu Ser Leu Asp Asn Asp Leu Ser Asn Ile Leu Lys
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Val Asp Phe Gln Asn Gly His Asn Ile Cys Thr Phe Ala Lys Trp Cys
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Ile Asn Asn Asn Leu Asp Glu Pro Ser Asn Leu Lys His Phe Arg Glu
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Met Leu Asp Tyr Tyr Ser Ser His Asn Val Thr Ile Ser Glu Asp Asp
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Leu Lys Asn Phe Ser Leu Val Leu Cys Thr His Val Ala Lys Val Asn
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Glu Lys Thr Asn Ser Ile Phe Arg Thr Tyr Glu Val His Gly Cys Glu
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Val Cys Asn Ser Phe Cys Leu Leu Phe Asp Glu Arg Ser Pro Phe Lys
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Ile Pro Tyr His Glu Leu Phe Cys Ala Leu Leu Lys Asn Pro Asp Ile
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Trp Ser Gln His Cys Ser Asn Phe Asn Lys Glu Ser Met Leu Ser Leu
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Arg Glu Phe Ile Met Lys Ala Leu Ala Ser Thr Ser Arg Cys Leu Arg
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Leu Asp Ile Val Glu Phe His Lys Glu Ser Lys Ala Leu Ile Phe Asn
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Phe Tyr Gln Gly Ile Gly Leu Ser Ala Leu Gln Gln Ile Ala Ser Thr
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Arg His Ile Ser Val Trp Gln Leu Leu Ser Pro Tyr Trp Pro Thr Val
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Cys Leu Thr Asn Met His Lys Ile Leu Ala Ser Leu Leu Thr Thr Asp
770 775 780

His Pro Asn Leu Glu Glu Ser Val Met Leu Leu Leu Ser Leu Ala Thr
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805 810 815

Ile Ser Ile Thr Val Glu Leu Leu Gln Leu Tyr Gln Asn Asp Val Pro
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His Glu Lys Ile Glu Asn Ala Leu Arg Lys Val Ala Met Ile Val Ser
835 840 845

Gln Val Val Asn Asp Glu Asp Leu Ser Asn Lys Glu Leu Leu Tyr Asp
850 855 860

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Leu Asn Asp Leu Lys Gly Lys Thr Ser Ile Asn Glu Lys Ile Lys Thr
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Ile Val Gly Ile Glu Lys Met Leu Ser Leu Cys Gly Gly Ala Val Lys
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Leu Gly Leu Pro Gln Ile Leu Ser Asn Leu Gln Ser Ala Phe Gln Asn
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Glu His Leu Arg Phe Tyr Ala Ile Lys Ala Trp Phe Ser Leu Ile Leu
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Ala Thr Lys Glu Pro Glu Tyr Ser Ser Ile Ala Gly Leu Ser Leu Val
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Val Ile Gln Ile Phe Asp Phe Ile Ser Ser Asp Thr His Lys Cys Leu
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Gln Gly Leu Lys Trp Ala Ile Pro Thr Ser Leu Asp Ser Ala Cys Phe
995 1000 1005

Ser Leu Lys Ala Lys Glu Ile Phe Cys Ser Leu Gln Asn Glu Asp
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Asn Glu Pro Val Cys Tyr Leu Gly Leu Gln Lys Leu Glu Leu Phe
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Phe Gln Ala Lys Val Asp Glu Leu His Asp Thr Leu Asn Leu Asp
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Ile Ser Asn Glu Val Leu Asp Gln Leu Leu Arg Cys Leu Leu Asp
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Cys Cys Val Lys Tyr Ala Ser Thr Asn Met Gln Ile Ser Tyr Leu
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Ile His Thr Trp Met Gln Leu Phe Ser Leu Lys Leu Met Glu Tyr
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Ala His Ser Gln Asn Ala Glu Lys Ile Phe Gly Ile Cys Ser Lys
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Ile Gln 1475	Lys Asp Pro Glu	Asn 1480	Lys Lys Ala Lys	Ile 1485	Gly Leu Leu
Asn Ser 1490	Met Leu Gln Ser	Gly 1495	His Tyr Glu Ser	Leu 1500	Val Leu Ser
Leu Asp 1505	Ser Phe Ile Ile	Asn 1510	Asp Asn His Glu	Tyr 1515	Ser Lys Met
Leu Asn 1520	Leu Gly Ile Glu	Ala 1525	Ser Trp Arg Ser	Leu 1530	Ser Ile Asp
Ser Leu 1535	Lys Lys Cys Leu	Ser 1540	Lys Ser Asn Leu	Glu 1545	Ser Phe Glu
Ala Lys 1550	Leu Gly Ser Ile	Phe 1555	Tyr Gln Tyr Leu	Arg 1560	Lys Asp Ser
Phe Ala 1565	Glu Leu Thr Glu	Arg 1570	Leu Gln Pro Leu	Tyr 1575	Val Asp Ala

Ala Thr	Ala Ile	Ala Asn	Thr	Gly Ala	His Ser	Ala Tyr	Asp Cys
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Tyr Asp	Ile Leu	Ser Lys	Leu	His Ala	Ile Asn	Asp Phe	Ser Arg
1595			1600			1605	
Ile Ala	Glu Thr	Asp Gly	Ile	Val Ser	Asp Asn	Leu Asp	Ile Val
1610			1615			1620	
Leu Arg	Arg Arg	Leu Ser	Gln	Val Ala	Pro Tyr	Gly Lys	Phe Lys
1625			1630			1635	
His Gln	Ile Leu	Ser Thr	His	Leu Val	Gly Tyr	Glu Lys	Phe Glu
1640			1645			1650	
Asn Thr	Lys Lys	Thr Ala	Glu	Ile Tyr	Leu Glu	Ile Ala	Arg Ile
1655			1660			1665	
Ser Arg	Lys Asn	Gly Gln	Phe	Gln Arg	Ala Phe	Asn Ala	Ile Leu
1670			1675			1680	
Lys Ala	Met Asp	Leu Asp	Lys	Pro Leu	Ala Thr	Ile Glu	His Ala
1685			1690			1695	
Gln Trp	Trp Trp	His Gln	Gly	Gln His	Arg Lys	Ala Ile	Ser Glu
1700			1705			1710	
Leu Asn	Phe Ser	Leu Asn	Asn	Asn Met	Phe Asp	Leu Val	Asp Glu
1715			1720			1725	
His Glu	Glu Arg	Pro Lys	Asn	Arg Lys	Glu Thr	Leu Gly	Asn Pro
1730			1735			1740	
Leu Lys	Gly Lys	Val Phe	Leu	Lys Leu	Thr Lys	Trp Leu	Gly Lys
1745			1750			1755	
Ala Gly	Gln Leu	Gly Leu	Lys	Asp Leu	Glu Thr	Tyr Tyr	His Lys
1760			1765			1770	
Ala Val	Glu Ile	Tyr Ser	Glu	Cys Glu	Asn Thr	His Tyr	Tyr Leu
1775			1780			1785	
Gly His	His Arg	Val Leu	Met	Tyr Glu	Glu Glu	Gln Lys	Leu Pro
1790			1795			1800	
Val Asn	Glu Gln	Ser Glu	Arg	Phe Leu	Ser Gly	Glu Leu	Val Thr
1805			1810			1815	

Arg	Ile	Ile	Asn	Glu	Phe	Gly	Arg	Ser	Leu	Tyr	Tyr	Gly	Thr	Asn
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His	Ile	Tyr	Glu	Ser	Met	Pro	Lys	Leu	Leu	Thr	Leu	Trp	Leu	Asp
1835						1840					1845			
Phe	Gly	Ala	Glu	Glu	Leu	Arg	Leu	Ser	Lys	Asp	Asp	Gly	Glu	Lys
1850						1855					1860			
Tyr	Phe	Arg	Glu	His	Ile	Ile	Ser	Ser	Arg	Lys	Lys	Ser	Leu	Glu
1865						1870					1875			
Leu	Met	Asn	Ser	Asn	Val	Cys	Arg	Leu	Ser	Met	Lys	Ile	Pro	Gln
1880						1885					1890			
Tyr	Phe	Phe	Leu	Val	Ala	Leu	Ser	Gln	Met	Ile	Ser	Arg	Val	Cys
1895						1900					1905			
His	Pro	Asn	Asn	Lys	Val	Tyr	Lys	Ile	Leu	Glu	His	Ile	Ile	Ala
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1925						1930					1935			
Ala	Thr	Ile	Lys	Ser	Thr	Ser	Gln	Lys	Arg	Ser	Leu	Arg	Gly	Lys
1940						1945					1950			
Ser	Ile	Leu	Asn	Val	Leu	His	Ser	Arg	Lys	Leu	Ser	Met	Ser	Ser
1955						1960					1965			
Lys	Val	Asp	Ile	Lys	Ala	Leu	Ser	Gln	Ser	Ala	Ile	Leu	Ile	Thr
1970						1975					1980			
Glu	Lys	Leu	Ile	Asn	Leu	Cys	Asn	Thr	Arg	Ile	Asn	Ser	Lys	Ser
1985						1990					1995			
Val	Lys	Met	Ser	Leu	Lys	Asp	His	Phe	Arg	Leu	Ser	Phe	Asp	Asp
2000						2005					2010			
Pro	Val	Asp	Leu	Val	Ile	Pro	Ala	Lys	Ser	Phe	Leu	Asp	Ile	Thr
2015						2020					2025			
Leu	Pro	Ala	Lys	Asp	Ala	Asn	Arg	Ala	Ser	His	Tyr	Pro	Phe	Pro
2030						2035					2040			
Lys	Thr	Gln	Pro	Thr	Leu	Leu	Lys	Phe	Glu	Asp	Glu	Val	Asp	Ile
2045						2050					2055			

Met	Asn	Ser	Leu	Gln	Lys	Pro	Arg	Lys	Val	Tyr	Val	Arg	Gly	Thr
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Ile	Leu	Arg	Lys	Asp	Gln	Glu	Ala	Asn	Arg	Arg	Asn	Leu	Cys	Ile
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2120						2125					2130			
Glu	Trp	Val	Asn	His	Thr	Arg	Pro	Phe	Arg	Glu	Ile	Leu	Leu	Lys
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Phe	Glu	Lys	Lys	Ile	Leu	Pro	Lys	Phe	Pro	Pro	Val	Phe	Tyr	Glu
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Trp	Phe	Val	Glu	Ser	Phe	Pro	Glu	Pro	Asn	Asn	Trp	Val	Thr	Ser
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Tyr	Val	Leu	Gly	Leu	Gly	Asp	Arg	His	Gly	Glu	Asn	Ile	Leu	Phe
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2270						2275					2280			
Glu	Gly	Gly	Phe	Arg	Lys	Ala	Ser	Glu	Ile	Thr	Met	Arg	Leu	Leu
2285						2290					2295			

Arg Ser Asn Gln Asp Thr Leu Met Ser Val Leu Glu Ser Phe Leu
2300 2305 2310

His Asp Pro Leu Val Glu Trp Asn Arg Lys Lys Ser Ser Ser Lys
2315 2320 2325

Tyr Pro Asn Asn Glu Ala Asn Glu Val Leu Asp Ile Ile Arg Lys
2330 2335 2340

Lys Phe Gln Gly Phe Met Pro Gly Glu Thr Ile Pro Leu Ser Ile
2345 2350 2355

Glu Gly Gln Ile Gln Glu Leu Ile Lys Ser Ala Val Asn Pro Lys
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